

Volatility of Crude Oil Prices and the Mitigation of Oil Price Risk

About KAPSARC

KAPSARC is an advisory think tank within global energy economics and sustainability providing advisory services to entities and authorities in the Saudi energy sector to advance Saudi Arabia's energy sector and inform global policies through evidence-based advice and applied research.

This publication is also available in Arabic.

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Key Points

The workshop participants voiced a number of diverse views about the prospects for future oil demand. They also clearly articulated the need for OPEC spare production capacity as a critical policy tool for the stabilization of world oil markets.

Energy transition projects have not proven themselves sufficiently to access project finance debt at scale. Mezzanine bank and private debt, senior debt, and cashflow self-financing are proving challenging and highly inaccessible for wind, solar, batteries, hydrogen, and carbon capture, usage and storage (CCUS).

Production capacity, including inventories, was highlighted as an important mechanism to ensure an adequate oil supply for balancing oil markets. The uncertainty surrounding future demand growth raises questions about the necessary level of investment needed to stabilize world oil markets. Diverse views were also expressed on future demand prospects, emphasizing the critical role of OPEC's spare production capacity in stabilizing oil markets.

Background to the Workshop

The past decade has witnessed unprecedented disruptions to world oil markets, which has led to a significant increase in the volatility of crude oil prices. Geopolitical complications, inflation, and disruptions to traditional established supply chains have placed OPEC+ on the front line of public policy debates.

On the financial side, volatility has been provoked by the progressive inversion of the United States (U.S.) yield curve (with the 10-year U.S. Treasury trading at a yield below that of the 2-year). Other drivers of volatility include the subsequent failure of Silicon Valley Bank and Credit Suisse, the Evergrande real estate crisis, and longer-term shifts such as planned modifications to the composition of Dated Brent, the Group of Seven (G7) price cap on Russian oil, and U.S. and International Energy Agency (IEA) plans to refill strategic petroleum reserves (SPRs).

It comes as no surprise that market expectations of 30-day future oil price volatility, shown by the Chicago Board Options Exchange (CBOE) Crude Oil Volatility Index (OVX), rose to an average value of 41.3 from October 2014 to October 2023, which was an 87% increase over the 35.8 recorded from June 2007 to September 2014. The average OVX value from 2014 to 2023 is over twice the value of the CBOE Volatility Index VIX S&P 500 (SPX) volatility index and rises to 225% (a 71% increase) when measured as a ratio to the VIX (see Figure 1). The sustained increase in volatility is a cause of concern for long-term investors in the oil industry and for policymakers striving to achieve a smooth transition to a more sustainable energy industry.

Measures of volatility: The VIX S&P 500 (SPX) volatility index is a financial benchmark that measures the expected volatility of the S&P Index. It calculates using the prices of SPX index options with

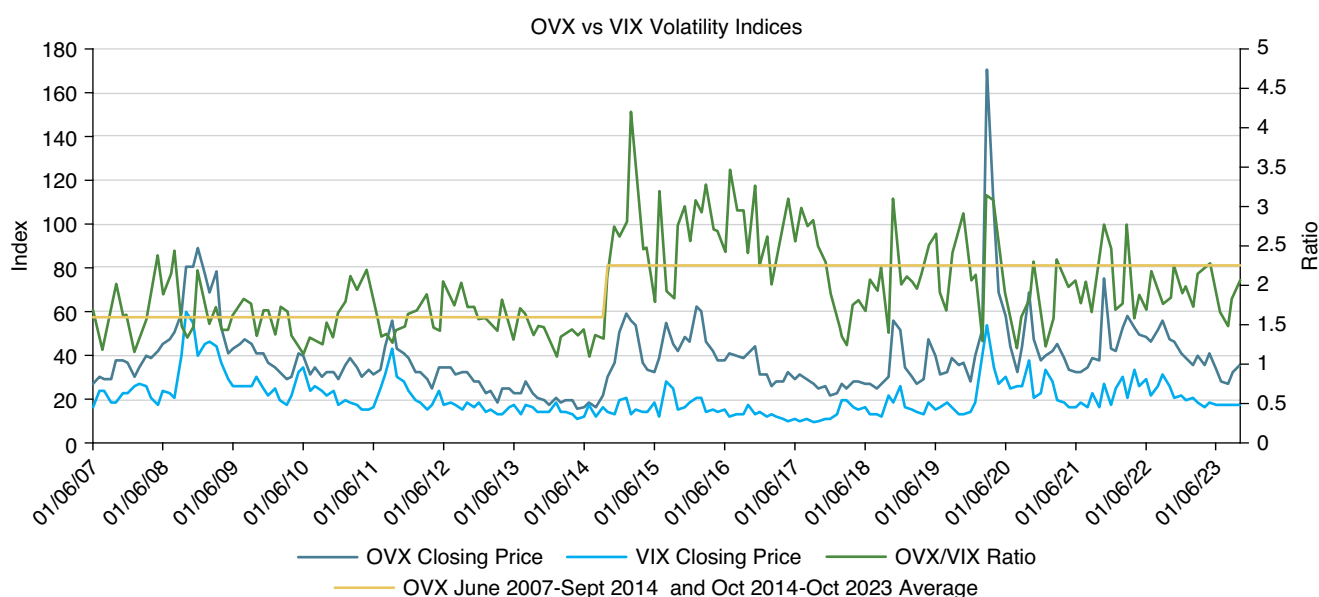
near-term expiry dates, generating a forecast of volatility 30 days into the future.

The CBOE OVX crude oil volatility index measures the market's expectation of the 30-day volatility of crude oil as priced by the United States Oil Fund (USO). The VIX and OVX are calculated by interpolating between time-weighted sums of two mid-quote values of S&P 500 and USO options, respectively (CBOE 2023).

The workshop began with an investigation of the causes and consequences of short-term price volatility. Specifically, the participants set out to determine the implications of price volatility for OPEC+ coherence and oil markets in general. The potential implications of price volatility for crude oil production and the global economy were also examined. The next part of the workshop investigated the strategies for oil market stabilization that are currently available to policymakers, including the role of financial institutions (exchange traded funds [ETFs], Chicago Mercantile Exchange [CME] rule changes, and managed money) in the recent episode of oil price volatility. The last section looked at the long-term development prospects for oil markets, such as whether recent environmental, social, and governance (ESG)-driven policies pressure oil companies to discontinue necessary investments in oil assets.

Throughout the event, participants shared their insights on the following questions:

- What are the main drivers and potential implications of oil price volatility for the global economy, oil market, producers, traders, and consumers?
- Has there been a recent structural change in the volatility of oil prices?

Figure 1. The volatility of crude oil prices.

Source: KAPSARC analysis.

- What was the role of financial institutions (ETFs, CME rule change, managed money) in the recent episode of oil price volatility?
- What role can/should governments play in oil market stabilization?
- What are the appropriate risk mitigation policies to be considered, including limiting unintended consequences and potential adverse implications for end users?
- Do recent ESG-led policies pressure oil companies not to continue oil investments?
- How do current government oil policies interact with oil investment decisions?
- Is there a difference between short-cycle and long-cycle investment decisions, and where does the U.S. shale sector fit in?

Introduction

The year 2022 was a landmark year, with high energy prices and more and more countries and people unable to access energy. Oil markets have been plagued by depleted strategic petroleum reserves (SPRs), geopolitical and economic turmoil, issues of piracy, sanctions, and ship-to-ship movement. On the financial side, there have been big increases in the volatility of commodity prices, including oil, liquefied natural gas (LNG), and coal. For the energy transition to be successful, these risks need to be managed effectively.

The impacts of climate change are here and clearly visible. It is more important than ever to understand the complex interactions between geopolitics, the energy transition, and physical and financial oil market dynamics. Moreover, there is skepticism after some of the big oil and gas companies publicly pulled back from some of their more forward-leaning commitments this year to try to get their share prices up.

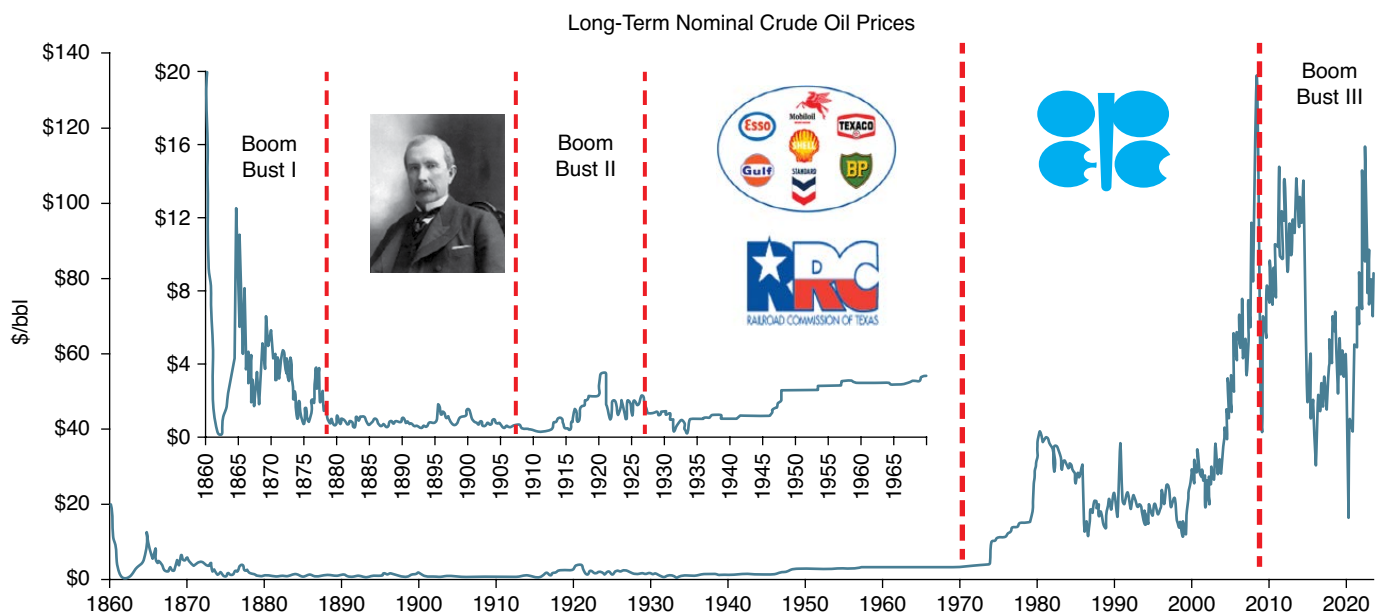
Causes and Consequences of Oil Price Volatility

Oil price volatility stems from both exogenous (e.g., geopolitical) volatility shocks and level shocks to the global macro economy (as well as potentially exogenous macro or financial volatility shocks).¹ Of these, level shocks seem most important quantitatively, so one may say that oil price uncertainty is mainly a global macro uncertainty most of the time. There are many structural reasons why the oil market has a hard time anticipating price movements. These include long lags in the creation of new production capacity

(up to five years), uncertainty regarding the level of future demand (while oil producers have short decision horizons), and the high costs of shut-ins, which can lead to short-term oil gluts and falling oil prices.

As shown in Figure 2, there have been three distinct boom-bust periods in the history of the oil industry: The early days of the industry (pre-Nobel brothers), the early 1990s to the depression (pre-Seven Sisters), and, more recently, from 2010

Figure 2. Oil price cycles.



Sources: Rapidan Energy Group (2021), Anonymous (1900), API, Fred (2024), EIA (2024).

Note: Monthly highest, lowest, and average prices paid by the Seep Purchasing Agency. Note: Data prior to 1875 were approximate quotations. From 1875-1894 prices are those of Oil City Oil Exchange for pipeline certificates. Data for 1895-97 are actual prices paid by the Seep Purchasing Agency.

¹ It is important to focus on conditional volatility (forward-looking or predictive uncertainty) as opposed to unconditional volatility. Conditional volatility has not changed much over time.

Causes and Consequences of Oil Price Volatility

to today. According to some workshop participants, the current period of increased volatility in world oil markets can be viewed, with some historical context, as being at the foothills of a multiyear oil price boom cycle. The defining feature of today's oil market "boom" period is that there is no durable swing producer to cushion wild movements in crude oil prices. Oil prices will gyrate between recession and shut-in for the foreseeable future.

The next big surprise to some oil analysts is that peak oil demand may well prove to be wishful thinking. Low International Energy Agency (IEA) oil demand forecasts following COVID-19 have been revised up repeatedly and appear to be in the process of returning to pre-COVID forecast levels (Grover and Lawler 2024). There are 1.12 billion people in the U.S., the European Union, Canada, Japan, Australia, and New Zealand. In 2022, oil demand from this industrialized group reached 40.9 million barrels per day (MMb/d) or 13.3 barrels per capita. Others are not so fortunate. The combined population of China, India, Southeast

Asia, and Africa was 1.4 billion in 2002. This "1.4 Billion People Club" will need a lot of energy to sustain itself in the future. Long-term oil demand forecasts for the 1.4 Billion Club range from an incremental 38.9 MMb/d (3 barrels per capita) to 129.7 MMb/d (10 barrels per capita) by 2050.

The consensus is that peak oil demand is near, so underinvestment in the oil industry is not going to be a problem. If peak oil demand does indeed prove to be wishful thinking, then underinvestment could be a problem. The next big question is whether OPEC+ will hold sufficient reserves and resolve to act as the swing producer for the world.

At the same time, the return on capital employed (ROCE) is well in excess of the S&P weighting, and investors are cautiously coming back to the energy sector. Investors are clearly questioning the sustainability of the sector. If current trends continue, we expect energy to return to a double-digit weighting in the S&P 500 before the end of the current investment cycle.

Strategies for Oil Market Stabilization

Oil price volatility means different things to different people. Economists view it as the annualized standard deviation of percentage returns. Futures traders see it as the fluctuation in daily profit and loss (P&L) in dollars per barrel (\$/b). Options traders view it simply as an input to options pricing formulas that matches the market price of a commodity option. To politicians, volatility means higher prices. This complicates the formulation of price stabilization policy considerably. If the definition of oil price volatility cannot be agreed on, it will be difficult to manage it effectively.

The standard measure of oil price volatility is percentage-based and negatively correlated to price. When prices are low (inventories are high), percentage volatility tends to be counterintuitively high. If volatility is measured in terms of dollars per barrel, it is more symmetric, and it increases when the price moves outside of the “normal” range in either direction (see Figure 3).

To further complicate matters, there are two markets for crude oil: physical barrels and financial barrels. Futures trading volumes for oil are 50 times bigger than for the physical oil used for daily consumption (Bouchouev 2023). While fundamentals matter, the price is also driven by traders and algorithms. Some of these trading activities act to exacerbate volatility, including:

1. Commodity Trading Advisors (CTAs): Momentum-Focused Algorithms

Momentum strategies such as carry-momentum involve looking at the structure of the forward curve, buying when backwardation accelerates and selling when it decelerates. This tends to exacerbate price volatility as traders purchase more oil when the price is rising. In this case, intervention by SPRs and OPEC has the potential to lower prices and restore them to their mean values. The problem is that oil is only a

small part of the total portfolio for the momentum traders, which includes equities, bonds and foreign exchange.

2. “Inflationistas:” Risk Parity, Portfolio Allocators and ETFs

Inflation strategies assume that oil and inflation form a feedback loop. There is a lagged pass-through of these price increases to other commodities. At the same time, volatile prices have an effect on inflationary expectations. Statistically, oil is often seen as the best inflation hedge, but this is based on only a few historical episodes, as high inflation has rarely been seen. Inflation hedging contributes more to price increases than oil price volatility.

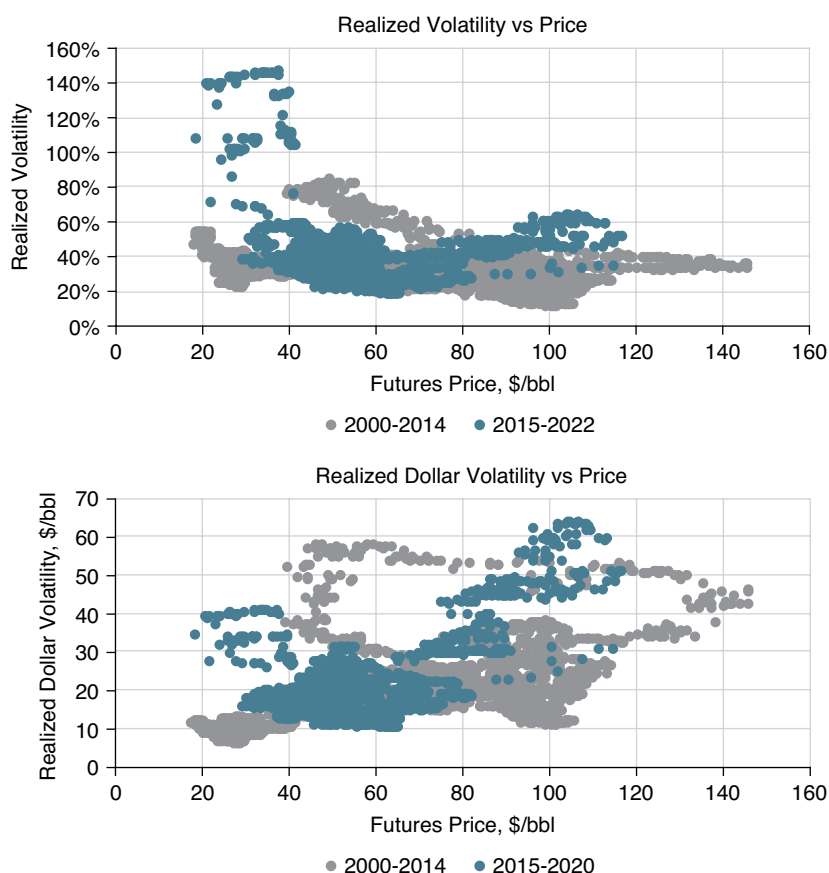
3. Option Hedgers: Industry Players That Manage Negative Gamma Risks

Options hedging strategies are based on the fact that options are similar to insurance contracts. The price of hedging is based on the cost of hedging against price movement (delta hedging). There are asymmetries in the demand for options hedging that lead to asymmetric price effects. For example, there are more buyers of downside insurance (producers) than upside (consumers). This results in “up the stairs, down the elevator” price dynamics that attract sellers when prices are low and buyers when they are high. It is possible to mitigate this risk by building “real” options such as SPRs and OPEC spare capacity.

Types of risk: Delta risk measures the rate of change of an options price relative to a change in the price of the underlying. In the case of oil, it measures the rate of change in the oil options price relative to a \$1 change in the price of crude oil. Gamma risk is the rate of change in the delta.

Strategies for Oil Market Stabilization

Figure 3. Volatility optics and illusion.



Source: Bouchouev (2023).

As highlighted in the workshop, there are a number of methods by which oil-consuming countries can shield themselves from oil price risk. Two examples include oil storage and hedging in oil futures markets. In the case of storing oil in response to higher expected prices, there is no guarantee that the oil price will not fall in the future, limiting commercial interest. Moreover, the difficulty of pricing long-term risks in oil futures markets has limited the ability to insure against these risks. Futures markets have little liquidity in oil markets beyond one year ahead. Other options are to develop domestic oil reserves, to reduce dependence on oil by promoting alternative technologies, and to build strategic oil

reserves, as the U.S., China, and India have done, among others.

Producer countries can protect themselves from oil price risk by storing oil above the ground in storage facilities or adjusting production (the latter amounts to storing oil below the ground, which is cheaper than above-ground storage). They can also engage in international portfolio diversification by holding financial assets in oil-importing countries, and they can create financial reserves to cushion the effects of temporary losses in foreign currency earnings due to falling oil prices. Finally, oil producers can diversify their economies by investing in non-oil sectors of the economy.

There is a widespread belief among policymakers that releasing volumes of oil from the U.S. SPR, in particular, has the potential to calm world oil markets. However, empirical evidence suggests that this is not necessarily the case. Notably, the SPR releases triggered by the U.S. military operation Desert Storm in 1991 and Hurricane Katrina in 2005, for example, only managed to lower the oil price by \$2.00/b. There are some instances when the effects of an SPR release appear modestly large, but generally the SPR is unsuitable for dealing with large actual or potential supply disruptions, or with business cycle-driven oil price fluctuations. This is because it is too small relative to the size of the oil market, and because it is designed to deal with short-lived disruptions, not persistent oil price movements. Moreover, exogenous releases of the SPR tend to be at least partially offset by increases in SPR inventories, which dampen the price response.

The 2005 Atlantic hurricanes unexpectedly disrupted the refining capacity in the Gulf of Mexico. This was a negative demand shock to global oil markets, lowering crude oil prices, and a negative supply shock in the U.S. gasoline market, raising gasoline prices. The release of the SPR only made it easier for East Coast refineries to increase gasoline production, which helps explain why the resulting reduction in crude oil prices was very small.

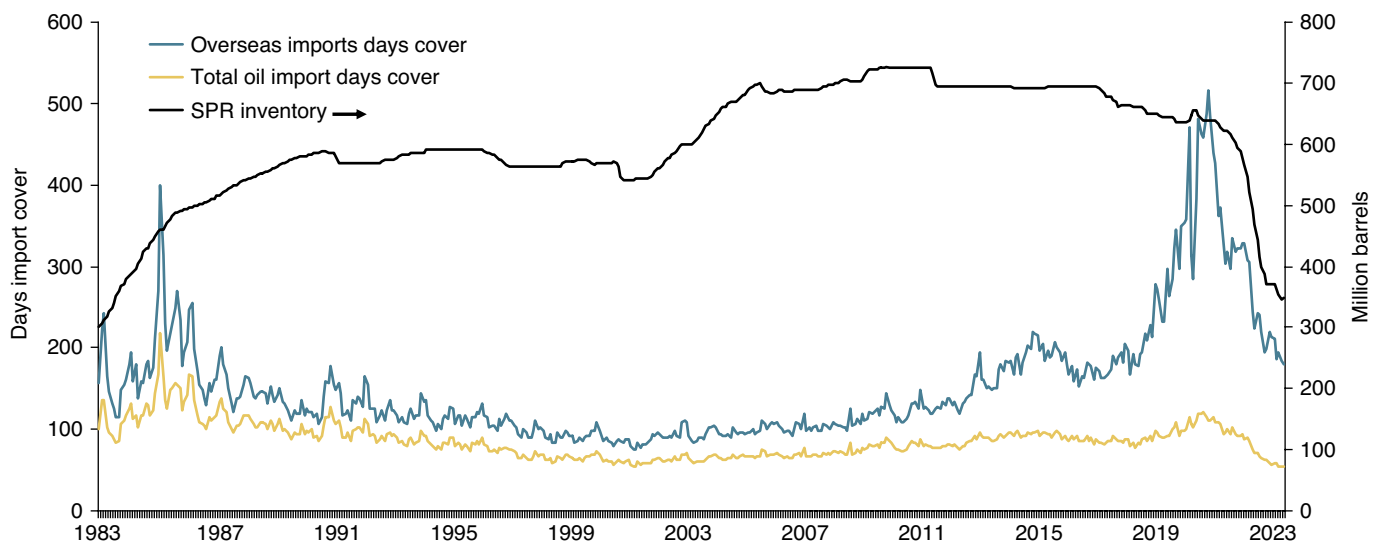
In the case of Desert Storm, the SPR release came too late to be of any material significance. The steep drop in the world oil price in 1991 has been attributed to the success of allied military operations and OPEC's ability to increase production. Once again, statistical evidence suggests that the intervention lowered the oil price by only \$2.00/b.

SPR inventories currently running at levels significantly higher than IEA requirements raises

the question of whether it is necessary to replenish SPR reserves, and to what level (see Figure 4). Since U.S. net oil trade and SPR stocks on a net-import days basis are currently higher than the 90-day IEA requirements, it may seem that the U.S. need not worry about refilling its SPR. However, it is important to mention the fact that U.S. imports are mainly medium and heavy grades of crude, whereas its exports are sweet light crude. Thus, the risks of a disruption are better measured by gross oil imports, which are well below 90 days of import cover. However, the focus should be on the days of medium grade imports covered (roughly imports from countries excluding Mexico and Canada). Computing this number is not possible, as the U.S. Department of Energy does not share data on the composition of the SPR by grade and sulfur content.

In short, there are a number of strategies that can be used to manage price volatility during the energy transition. Specifically, the use of SPR and OPEC spare production capacity can be used to hedge price volatility. To this end, it would be useful to take measures to de-politicize the U.S. SPR and set systematic buy/sell decision rules that can eliminate human bias. The SPR management team could focus on time spreads and SPR loans, and not on the absolute price level. Financial barrels are here to stay, even while the demand for physical oil falls. Prices will become financial benchmarks with higher volatility, so modeling financial supply and demand is as important as modeling the physical markets. In this environment, it is important to explore new price modeling paradigms. For example, the oil price can be seen as a financial derivative of stochastic inventories and expressed as relative probabilities of upside and downside squeezes. More details on this method and other new approaches to modeling oil prices and the behavior of financial market participants in the oil market are cited in Bouchouev (2023).

Figure 4. Strategic petroleum inventories rise relative to overseas imports.



Source: EIA (2024); Federal Reserve Bank of Dallas calculations.

Note: Overseas imports are total imports excluding Canada and Mexico.

Not All Risks are Hedgable

The volatility of crude oil prices is often dwarfed by less hedgable risks in the energy industry, including natural gas price risk and transportation or freight risk. West Texas Intermediate (WTI) volatility averaged only 0.36 year to date as of September 2023, compared to 0.81 for natural gas, 1.30 for very large crude carrier (VLCC) freight volatility (AG-Japan), and 1.4 for Aframax Freight (Caribbean-UKC).

It is interesting to note that non-commercial speculators' participation in commodity markets does not necessarily correlate with higher volatility. In fact, there would appear to be a slight bias towards the opposite. This can be seen when speculative participation is measured across a basket of commodity futures, including WTI, copper

and lean hogs, and has been evident for the last 10 years.

A glance at the data for WTI futures volatility and non-commercial futures participation from 2014 to 2023 shows no correlation between speculator activity in oil markets and oil price volatility. In fact, from 2022 to August 2023, speculation was low and volatility was high.

World Oil Markets are Efficient and Volatility Has Been Subsiding Since 2022

When studying oil price volatility, it is important to consider the Brent crude oil benchmark. Over 75% of the world's traded crude oil is priced directly

(and indirectly) off of Brent. A glance at historical Brent prices and volatility tells an interesting story. For much of 2022, higher oil prices, volatility, and increased exchange margins (capital requirements) put a dampener on trading activity on organized exchanges. Since late 2022, this trend has reversed and trading activity has recovered. Volatility of Brent and WTI futures has been falling steadily since the February 2022 spike caused by the Russian invasion of Ukraine (see Figure 1).

The effects of major disruptions to supply and demand have been mitigated by Adam Smith's "invisible hand" and the smooth working of global oil markets. Sanctions on Russia have re-worked global crude trade flows. European imports of Russian crude have dropped to low levels as some exceptions to the sanctions have been permitted. Flows from Russia to Europe have been replaced with crude from the U.S. (Midland), Norway (Johan Sverdrup), and the Middle East (including occasional cargoes of Murban). Russian exports have been diverted to India, China, and Turkey. In 2023, Russia replaced Saudi Arabia as the biggest supplier of oil to China.

The growth in U.S. crude production and exports has been driven by Midland WTI and the Permian Basin. According to the U.S. Energy Information Administration (EIA), total U.S. production was expected to increase by nearly 1.4 MMb/d in 2023 (IEA 2024). U.S. exports can be expected to increase at roughly the same amount because domestic refineries are already running at maximum volumes of light sweet crude. Midland WTI accounts

for 67% of total U.S. exports (3.6 MMb/d), with flows to Europe increasing significantly due to the Russia-Ukraine war.

By late 2023, European imports of Russian gasoil/diesel had dropped to record lows and were being replaced with products from India and the Middle East. These changes in crude and product flows had a significant impact on freight markets and transportation costs. Both shipping distances and costs have increased, pushing up freight rates and price volatility.

There are several tools available on futures markets to alleviate these price risks: (i) the Intercontinental Exchange (ICE) Midland WTI (HOU) is a physical deliverable futures contract for the U.S. Gulf Coast (USGC), with the contract offering a simple solution to hedge USGC price exposure and can be traded directly with Brent to mitigate price risk for producers and consumers; (ii) the ICE Baltic Exchange freight futures contract for Middle East to United Kingdom Aframax clean tanker voyages; (iii) ICE Low Sulphur Gasoil futures contracts, which now exclude Russian-origin gasoil from the contract; and (iv) ICE Futures Abu Dhabi (IFAD), launched in March 2021 and home to the world's first Murban crude futures contract offering transparent pricing from ADNOC onshore fields. Volumes from all four futures contracts have been increasing steadily over the past few months as liquidity returns to energy futures markets. Murban crude (40.4 API and 0.79 sulfur) alone is on a distinct upward trend, rising by 100% from January 2022 to August 2023.

Longer-Term Development Prospects of Oil Markets

Workshop participants expressed mixed views about whether or not upstream investments are adequate to meet global oil demand forecasts in the longer term. In the final analysis, capital spending is not about nominal dollars spent but about the efficiency of the capital being employed. A number of considerations support this proposition. For instance:

- Finding and development costs have been falling steadily from around \$30/b in 2010-2013 to approximately \$11/b in 2019. While costs rose steadily during the post-COVID-19 recovery, they were down by 10%-20% in the first half of 2023, and efficiency gains in U.S. shale were up by 5%.
- Non-OPEC production growth is expected to rise by 1.8 MMb/d in 2023 and another 0.8 MMb/d in 2024. Demand growth, on the other hand, is expected to grow by only 1.6 MMb/d in 2023 and 1.4 MMb/d in 2024.

Over the longer term, peak oil supply might yet be (mis-)matched with peak oil demand. While the crude oil supply cost curve is long and flat until 2026, the long-term picture is shifting as ESG concerns are focusing investors on sub-five-year projects. The costs of raw materials might have less upside, and may even have downside risk, while ESG costs are rising. This decrease in oil supply might be tempered by low-cost-producing countries looking to raise output to monetize crude oil reserves. On the demand side, many analysts see peak fuel demand as early as 2026-2027, with peak oil demand occurring by the end of the decade. The jury is out on this prediction, however, as others point to peak demand by 2040-2050.

In the U.S., shale production can be expected to grow from a peak of 13.2 MMb/d in 2023 to 15-16 MMb/d by the end of the decade. Shale growth will be positive so long as prices remain above \$70/b. It will grow by 300,000-400,000 barrels per day (kb/d) if crude oil prices are slightly higher at \$75/b.

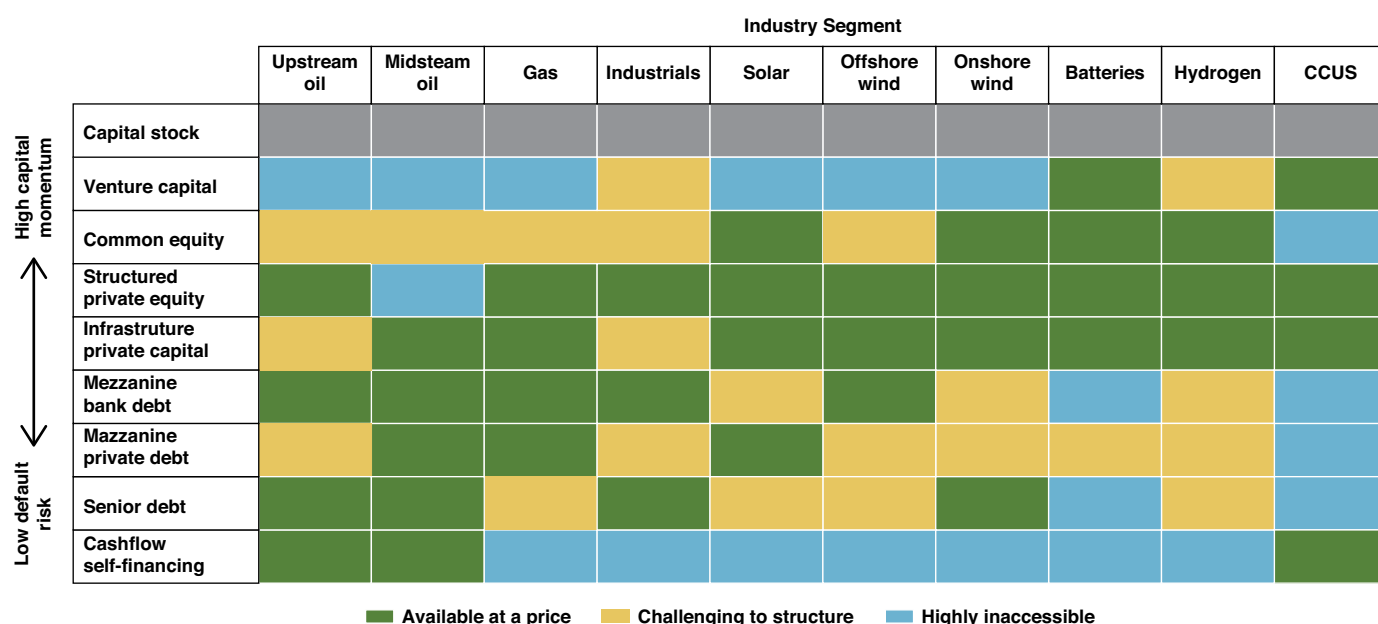
Global capital markets tell a similar story. When crude oil prices are high, capital is available for oil companies. The half a trillion USD that has been allocated for the energy transition was matched by a similar sum allocated to the oil sector in 2023. Global upstream exploration and production capital expenditure (capex) rose by \$10 billion in 2022 to over \$510 billion, effectively matching the funds earmarked for the energy transition.

The primary driver behind the deceleration of oil demand growth in the 2020s is likely to be the cheap electrification of light vehicles, and not decarbonization. In the next five years, the demand displacement from EV penetration for LVs is expected to increase from marginal to market-moving. By 2027-2028, electric vehicle displacement – or lost demand growth – has the potential to reach 440,000 b/d.

According to the S&P Global (2023) Inflections base case, oil is still expected to dominate global energy demand in 2050. The total share of fossil fuels will fall from 80% to 60% of energy demand by the end of the forecast period. Even the most accelerated outlook for the energy transition fails to meet the net-zero goals established in the Paris Agreement.

Energy transition investments have not proven themselves sufficiently to enable them to access project finance debt at scale. Mezzanine bank and private debt, senior debt, and cashflow

Figure 5. Energy transition investments and industry readiness.



Source: S&P Global (2023).

self-financing are proving challenging and highly inaccessible for wind, solar, batteries, hydrogen, and CCUS (see Figure 5). Renewable power remains the main focus of energy transition investments, even as renewable natural gas (RNG) and CCUS are attracting outsized attention. New additions to global renewable power facilities are forecast to exceed 600 gigawatts by 2023. Lags in the construction of transmission capacity have resulted in more power on the grid waiting for interconnection. The overbuild is so significant that manufacturers and data farms are relocating to stranded wind and solar production areas. In comparison, industrial production continues to lag. U.S. banks are active in the oil and gas consolidation business, and are

underwriting utilities, while European banks have increased their renewables project financing and are helping to service the growing appetite of investors for tech companies.

It is important to match segmented investor appetites to individual asset profiles. Private capital is beginning to cede ground to corporate balance sheets in energy transition investments. Private equity firms have raised more than \$200 billion, \$110 billion of which has been invested since August 2022. Private firms are about twice as fast at raising energy transition capital than investing it. Without a major shift in debt financing to backfill equity, private project financing is likely to continue to lag.

Conclusion

The first session of the workshop raised the alarm for the importance of oil production capacity, including inventories, to ensure there is an adequate supply to balance oil markets. However, there is considerable uncertainty concerning future demand growth, even in this decade. This raises questions for producers about the level of investment that will be required. The current levels of investment beyond three years are unclear, while major investment cutbacks are being made in the oil and gas industry to achieve long-term climate targets. Workshop participants voiced a number of diverse views about the prospects for future demand and clearly articulated the need for OPEC spare production capacity as a critical policy tool for the stability of world oil markets.

In the second session, delegates offered a number of strategies for oil market stabilization. A key conclusion was that the oil market requires effective risk management tools and a depolitization of strategic petroleum reserves. The role of financial participation (speculation) in world oil markets and

its effects on the volatility of oil prices is an ongoing topic of research that has received considerable attention during periods of high volatility in oil prices. This subject remains a rich area for future research efforts, especially since there is a wider breadth and a greater availability of data on financial participation in world oil markets. This line of enquiry, when paired with continued research on market fundamentals, can help provide clarity on current and future price movements.

Finally, the session on the long-term prospects for oil markets highlighted the uncertainty that producers face concerning long-term investment decisions. Some analysts and organizations argued that there was sufficient investment due to the abundance of oil resources and the cost-reducing effects of technological progress. Others argued that there was insufficient investment in the oil and gas sector, given the slowdown in exploration and capacity investment and the steady increase in oil consumption.

About the Workshop

The workshop was held on September 14, 2023, in New York, in joint partnership between the King Abdullah Petroleum Studies and Research Center (KAPSARC) and the Center on Global Energy Policy at Columbia University. It followed a webinar held on December 21 and 22, 2021, between KAPSARC and the Oxford Institute for Energy Studies and the Center for Energy, Petroleum, and Mineral Law and Policy, University of Dundee, to investigate the causes and consequences of short-term price volatility and provide a roadmap for how policy can mitigate oil price risk.

The 2023 workshop gathered over 30 experts from various fields and consisted of the following sessions:

- Causes and Consequences of Short-Term Price Volatility
- Strategies for Oil Market Stabilization
- Longer Term Development Prospects of Oil Markets

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Notes



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About the Team



Jennifer Considine

Dr. Jennifer Considine is a Visiting Researcher at KAPSARC and a Senior Research Fellow at the Centre for Energy, Petroleum and Mineral Law and Policy (CEPMLP) in Dundee, Scotland. Previously, she led a number of projects involving options pricing, real options valuations of physical assets. These included electricity generation facilities, storage companies, natural gas pipelines and contracts, risk management and hedging techniques, and trading strategies for a variety of commodities, including natural gas, electricity, and crude oil.

Dr. Considine is a former member of the Board of Directors for Canada Post and a founding member of a number of initiatives to promote Scottish-Canadian relations, including the Canadian Friends of Scotland.



Abdullah Aldayel

Abdullah is a Research Associate in the Oil & Gas program at KAPSARC, with a focus on oil markets and energy policies. He primarily works on the economic cost of shocks to world oil markets. His work has been published in several peer-reviewed journals.

Abdullah holds a B.S. degree in Petroleum Engineering from the King Fahd University of Petroleum and Minerals (KFUPM).

About the Project

The purpose of the World Oil Market Rebalancing: The Role of Oil Inventories project is to provide a snapshot of global oil markets and inventories at any given time, and to identify whether the global or regional markets are well balanced. If not, there may be regional or global surpluses (or shortages) of crude oil supplies and inventories that can trigger a price reaction and a subsequent rebalancing of world oil markets. The objective of the project is to determine the implications of price volatility on world oil markets and the optimal level of inventories needed to rebalance them. The project also aims to understand how the emerging commodity minerals could impact the oil market.

The project aims to answer the following questions:

1. How high do inventories have to be before the world's oil markets become over supplied?
2. Are current inventory levels so high that there is the risk of another price shock?
3. What are the potential implications of price volatility (e.g., economic sanctions), new commodity markets (such as rare earth metals), and the role of various institutions (such as OPEC) in mitigating oil price risk?
4. What are the appropriate policy tools and asset acquisitions for the mitigation of oil price risk?



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